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# ENTOMOLOGICAL NEWS

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JAMES RIDINGS
1803-1880

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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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KANSAS ENTOMOLOGICAL SOCIETY, APRIL 24, 1926.

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CENTER ROW: LAWSON, CIPRA, SMITH, STILLWAGON, SMITH, PARKER, DEAN, REODIO, DOERING, BRYSON.
FRONT ROW: BROWNE, DEAY, STEPHENSON, HUNGERFORD, McCOLLOCH, BUTCHER.

# ENTOMOLOGICAL NEWS

VOL. XXXVII DECEMBER, 1926 No. 10

## A Key to the North American Species of Macrolophus with Descriptions of Two New Species (Hem.: Miridae).*

By HARRY H. KNIGHT, Ames, Iowa.

It now appears that three species have been passing under the name *Macrolophus separatus* Uhler, all of which have the same general color aspect yet differ distinctly in the structure of antennae and head, not to mention a few minor characters. From a study of the original description of *separatus* Uhler it is impossible to know the type locality of the species and likewise the particular specimens from which the description was drawn. If the type is selected from the Grenada specimens it is possible that the species might prove different from the form here redescribed. For the present I determine *separatus* Uhler as the species with hemelytra having a fuscous point at base of each hair except on narrow outer margin, and in distribution found from the transition to lower austral life zones.

The best characters for distinguishing the species of *Macrolophus* appear to be in the relative length of antennal segments, width of head and vertex, size of eyes and position, and width and length of the pronotum. The genitalia appear to be generic in character, and noteworthy in having the right clasper greatly reduced and inconspicuous; and in this connection I have studied the genotype, *Macrolophus nubilus* (H. S.).

**Macrolophus separatus** (Uhler).

1894 *Dicyphus separatus* Uhler, Proc. Zool. Soc. London for 1894, p. 194.

The form I take to be *separatus* Uhler has the following characters: ♂. Length 4.3 mm. Head: width .54 mm., vertex .28 mm.; lateral width of an eye .20 mm., space between eye and pronotal collar, .114 mm.; without trace of a fuscous vitta behind dorsal margin of eye. Rostrum, length 1.79 mm.,

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.



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scarcely attaining posterior margins of hind coxae. Antennae: segment I, length .38 mm., black; II, 1.17 mm., yellowish, narrow apex blackish; III, 1.28 mm., slender, yellowish to dusky; IV, .51 mm., fusco-brownish. Pronotum: length .66 mm., width at base 1.06 mm.

♀. Length 4.2 mm. Head: width .56 mm., vertex .285 mm.; lateral width of an eye .20 mm., space between eye and pronotal collar .114 mm. Antennae: segment I, length .34 mm.; II, 1 mm., practically equal to width of pronotum at base; III, 1.2 mm.; IV, .52 mm.

*Plesiotypes:* ♂, ♀, Sept. 22, 1907, Hessville, Indiana (W. J. Gerhard). Records: ALABAMA—♀ August, 1918, Kushla (A. H. Sturtevant). DISTRICT OF COLUMBIA—♀ July 27, 1885, ♂ August 5, 1885, Washington (O. Heidemann); these specimens determined as *separatus* by Uhler. FLORIDA—♂ ♀, "Jacksonville." ILLINOIS—♂ August 4, Chicago (W. J. Gerhard). INDIANA—♂ ♀ September 22, 1907, Hessville (W. J. Gerhard). MARYLAND—2♀ August 7, Annapolis Junction; ♂♀ September 11, 1892, Blandensburg (O. Heidemann). NORTH CAROLINA—2♀ July 25, Tryon (W. F. Fiske), collected at light.

**Macrolophus longicornis** new species.

Color characters suggestive of *separatus* Uhler, but distinguished by the longer antennae as compared with the head and pronotum; length of antennal segment I equal to (♀), or greater than (♂) width of head.

♂. Length 4.5 mm., width 1.03 mm. Head: width .48 mm., vertex .27 mm.; lateral width of an eye .156 mm., space between eye and pronotal collar .14 mm. Rostrum, length 1.76 mm., nearly attaining posterior margins of hind coxae. Antennae: segment I, length .51 mm., pale, apex blackish; III, 1.52 mm., slender, pale; IV, .52 mm., pale to dusky. Pronotum: length .56 mm., width at base .86 mm. General coloration greenish yellow, and darkened with fuscous nearly as in *separatus* Uhler, but the fuscous points on corium much fainter and confined to inner half; length of antennal segment II about equal to basal width of pronotum plus width of head (1.32 mm.).

♀. Head: width .50 mm., vertex .28 mm. Antennae: segment I, length .50 mm.; II, 1.20 mm., length much greater than width of pronotum at base; III, 1.52 mm.; IV, .54 mm. Pronotum: length .54 mm., width at base .91 mm.

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*Holotype:* ♂ July 24, 1920, Cranberry Lake, New York (C. J. Drake); author's collection. Allotype: ♀ July 29, 1920, Wanakena, New York (C. J. Drake). *Paratypes:* ♀ July 15, 1920, allotypic. ♂ July 21, 1920, Branford, Connecticut (B. H. Walden). ♂ 2 ♀ July, 1888, Muskoka Lake District, Ontario (E. P. Van Duzee); Iowa State College collection.

**Macrolophus brevicornis** new species.

Suggestive of *longicornis* but the antennae distinctly shorter, segment I not equal to width of head; distinguished from *separatus* as shown in the key.

♂. Length 3.6 mm., width .96 mm. Head: width .48 mm., vertex .26 mm.; lateral width of an eye .157 mm., or a trifle greater than the space (.114 mm.) between eye and base of head where the collar normally fits against it. Rostrum, length 1.34 mm., reaching to middle of hind coxae. Antennae: segment I, length .34 mm., scarcely equal to width of vertex plus dorsal width of an eye; II, .88 mm., being a trifle longer than width of pronotum at base, the apical one-fourth blackish; III, 1.03 mm., length greater than segment II which is unusual in the family Miridae; IV, .43 mm. Pronotum: length .54 mm., width at base .84 mm.

♀. Head: width .47 mm., vertex .25 mm.; lateral width of an eye .157 mm., space between eye and pronotal collar .114 mm. Antennae: segment I, length .33 mm.; II, .75 mm., not equal to width of pronotum at base; III, 1 mm.; IV, .38 mm. Pronotum: length .54 mm., width at base .84 mm.; thus antennal segment II is not equal to basal width of pronotum in the female.

General coloration lemon yellow, sometimes greenish yellow; head with a fuscous stripe behind dorsal margin of the eye; hemelytra with fuscous points more distinct than in *longicornis*, basal two-thirds of corium without fuscous points at base of hairs except one row bordering claval suture.

*Holotype:* ♂ August 19, 1920, Lakehurst, New Jersey (Wm. T. Davis); author's collection. *Allotype:* same data as the type. *Paratypes:* IOWA—2♂, 1♀, July 1, 1894, ♂ July 26, ♂ Aug. 18, 1895, ♀ June 20, 1896, Ames (E. D. Ball); Iowa State College collection. KANSAS—♀, "Kans." MARYLAND—♂ October 12, 1901, Glen Echo (O. H. Heidemann). MISSOURI—♀, Forest Park, St. Louis.

*Key to the species of Macrolophus.*

1. Length of antennal segment I equal to width of head across eyes.....2
   Length of antennal segment I equal to or slightly greater than width of head across eyes; length of segment II distinctly greater than basal width of pronotum. *longicornis* n. sp.
2. Head with postocular space nearly equal to lateral width of an eye, a fuscous stripe behind dorsal margin of eye; antennal segment II with apical one-fourth blackish; basal two-thirds of corium without fuscous points at base of hairs except one row bordering claval suture. *brevicornis* n. sp.
   Head with postocular space equal to little more than half the lateral width of an eye; antennal segment II narrowly fuscous at apex; corium with three or four rows of fuscous points on basal two-thirds.....*separatus* Uhler

## Notes on the Acrididae of Brazos County, Texas (Orthoptera).

By V. A. Little, College Station, Texas

For the past two years the writer has intensively collected and made many notes upon this family. The work was not limited to the summer months alone but extended over the entire year. Much of the data of the seasonal appearance of the adults was obtained from caged specimens.

Brazos County is located in the east central part of Texas, about one hundred and fifty miles north of the Gulf of Mexico. It lies in that part of the Gulf Costal Plain known as the "East Texas Timber Belt." The general elevation ranges from two hundred to four hundred feet above sea level, sloping gently toward the southeast.

### Tryxalinae.

Mermiria bivittata Serville. Fairly common. Taken as early as May 29. Found usually in damp spots in rank grass.

Mermiria maculipennis maculipennis Bruner. Very rare.

Tryxalis brevicornis Linnaeus. Very rare. Not found earlier than the latter part of July.

MESOCHLOA ABORTIVA Bruner. Common. Both adults and nymphs taken throughout the year. Found in greatest numbers along small streams in pastures.

SYRBULA ADMIRABILIS Uhler. Common. Reaches maturity as early as June. Rank grass of lowlands its favorite habitat.

AMBLYTROPIDIA OCCIDENTALIS Saussure. Rare. Found in fall and spring among post oak and hickory leaves.

DICHROMORPHA VIRIDIS Scudder. Rather rare. Found in pasture lands among water courses.

ORPHULELLA PICTURATA Scudder. Common. Taken as early as the middle of May.

ORPHULELLA PELIDNA Burmeister. Common. Reaches maturity as early as June 1.

BOOPEDON NUBILUM Say. Fairly common. Reaches maturity in early June.

BOOPEDON AURIVENTRIS McNeill. Rare. Taken as early as May 29. Found in ungrazed pasture lands.

AGENEOTETTIX DEORUM Scudder. Taken sparingly in pastures. Not confined to sandy soils. Reaches maturity by midsummer.

PSOLOESSA TEXANA Scudder. Rare. Found in post oak woods in April.

OEDIPODINAE.

ARPHIA XANTHOPTERA Burmeister. Common. July 8, earliest date taken. Found in post oak woods.

ARPHIA SULPHUREA Fabricius. Common. Reaches maturity as early as the middle of April. Found in post oak woods and edges of old fields and pastures.

CHORTOPHAGA VIRIDIFASCIATA De Geer. Common. Winter passed in nymph stage. Adults taken as early as February 6.

ENCOPTOLOPHUS SUBGRACILIS Caudell. Taken sparingly in pastures among goat weeds.

HIPPISCUS RUGOSUS Scudder. Very common in pasture lands. Reaches maturity in early June.

HIPPISCUS SAUSSUREI Scudder. Fairly common in pastures and waste lands. Adults taken in April.

DISSOSTEIRA CAROLINA Linnaeus. Fairly common. Adults seen as early as May. Widely distributed.

SPHARAGEMON BOLLI Scudder. Taken sparingly in post oak woods.

SPHARAGEMON CRISTATUM Scudder. Common in sandy soils. Adults taken as early as April 17.

SPHARAGEMON AEQUALE Say. Very rare.

TOMONOTUS AZTECUS Saussure. Very rare. Found on red clay and gravel.

MESTOBREGMA FUSCIFRONS Stal. Common. Overwintering nymphs reach maturity in early March. Brood hatching from overwintering eggs reach maturity in early June.

MESTOBREGMA ASPERA Scudder. Very rare. Found only in fall.

PSINIDIA FENESTRALIS Serville. Very common on sandy soils. Adults taken as early as latter part of April. Nymphs found throughout winter.

TRIMEROTROPIS CITRINA Scudder. Common. Adults taken as early as April 17.

HADROTETTIX TRIFASCIATUS Say. Common. May 20, earliest date taken. Usually found in rocky waste lands.

LOCUSTINAE.

ROMALEA MICROPTERA Beauvois. Fairly common. Reaches maturity in early June.

SCHISTOCERCA AMERICANA Drury. Common. Adults taken throughout the year.

SCHISTOCERCA OBSCURA Fabricius. Common in late summer and fall.

SCHISTOCERCA DAMNIFICA Saussure. Rather rare. Found in fall, winter and spring in post oak woods.

PARAIDEMONA PUNCTATA Stal. Common. Taken throughout the year.

CAMPYLACANTHA OLIVACEA Scudder. Rather common. Taken in August and fall on goat weeds and broom weeds near post oak woods.

HESPEROTETTIX SPECIOSUS Scudder. Common in fields and pastures. Latter part of May earliest date taken.

MELANOPLUS SCUDDERI Uhler. Most abundant and widely distributed short-winged species we have. One specimen taken in mid-winter.

MELANOPLUS TEXANUS Scudder. Found only in the spring in post oak woods. Reaches maturity in April.

MELANOPLUS PLEBEJUS Stal. Very common in low lands on edges of fields and pastures.

MELANOPLUS FLAVIDUS Scudder. Taken sparingly during summer and fall in pastures and uncultivated fields.

MELANOPLUS ATLANIS Packard. Rather common. Adults taken in numbers as early as April 9. Found chiefly in pastures.

MELANOPLUS FEMUR-RUBRUM De Geer. Rather common. Maturity reached in late spring or early June.

MELANOPLUS BISPINOSUS Scudder. Very common. Adults taken as early as latter part of April.

MELANOPLUS IMPIGER Scudder. Rather rare. Maturity reached by the middle of June. Found in uncultivated fields.

MELANOPLUS KEELERI Thomas. Rather rare. Found along edges of lowlands in woods and thickets. Taken not earlier than June.

MELANOPLUS DIFFERENTIALIS Thomas. Maturity reached in early June. Most destructive locust in Texas.

MELANOPLUS PONDEROSUS Scudder. Found in numbers along the margins of fields feeding on foliage of trees and shrubbery. Reaches maturity in early summer.

## Notes on the Distribution of Hesperiidae in Western Massachusetts (Lepidoptera).

By H. H. SHEPARD, College Park, Maryland.

My early collecting days were spent on a farm and its neighboring woods and fields on the hills of Phillipston, a small town in northwestern Worcester County, Massachusetts, about ten miles from the New Hampshire line and directly south of Mt. Monadnock. This portion of Massachusetts has many faunal characteristics in common with New Hampshire, even its more northern White Mountain region, as will appear from facts set forth in this paper. The hills in Phillipston are of an altitude of 1100-1300 feet above sea level. No low point is much more than two hundred feet lower than the first figure.

Although I had collected for several years previously to 1919, I had not taken much notice of the Hesperiidae. At that time, however, I became interested in them through my first and best friend in entomology, Mr. C. V. Blackburn, of Stoneham, Mass. Since then I have made a list of Hesperiid captures with notes, and think it will be of interest to lepidopterists in general and to those of New England in particular. I have attempted to give comparative notes from other parts of western Massachusetts, especially as I have for the past five years been located at Amherst in the Connecticut Valley, continuing the collecting of skippers in that locality.

Amherst is located in a very interesting, and a somewhat peculiar, land-formation. The Connecticut Valley at this point is nearly ten miles broad, flat and fertile with hills to the east and west. On the north there are hills which shut in the valley close to the river in that direction. South of Amherst the Holyoke Range, of which Mt. Tom forms the western end, lies directly across the valley as a narrow ridge 900 feet higher than the floor of the valley, Amherst itself being nearly 300 feet above sea level. This protected bit of valley affords a place for the more southern forms of life to find a favorable home, provided they can find their way through the Holyoke Range, certainly a most formidable barrier at most points. Amherst is about thirty miles southwest of Phillipston, and its butterfly fauna makes quite a contrast to the northern elements in that of the latter.

I have used in his paper the classification of Hesperiidae that A. W. Lindsey uses in his "Hesperioidea of America North of Mexico," February, 1921.

*Hesperiidae taken in Phillipston, Massachusetts.*

EPARGYREUS TITYRUS Fabr. In mid-June and later.

THORYBES PYLADES Scud. As early as June 4. Eggs are laid on the leaves of white clover.

THANAOS ICELUS Scud. & Burg. Earliest date, May 24. I have reared this species from a larva found on poplars.

T. PERSIUS Scud. Captured on May 27 in 1920.

Race LUCILIUS Scud & Burg. Larvae found on garden col-

umbines *(Aquilegia)* in considerable numbers in late summer. Specimens reared from columbine seem to always exhibit the distinct markings of *lucilius*, but I should want to rear a long series before making anything like a definite statement.

T. JUVENALIS Fabr. Earliest date, May 27. This species and *icelus* have been the most common species of the genus in my experience in Massachusetts.

T. HORATIUS Scud. & Burg. Taken on July 13, 1919. Not at all a common species in Massachusetts.

CARTEROCEPHALUS PALAEMON Pallas. My best capture. As far as I can ascertain this species had never been taken in Massachusetts up to this time. My specimen was taken in a freshly cut-off woodland swamp at an elevation of somewhat over 1000 feet on June 20, 1920. It was flying in the bright sunshine in a rank growth of raspberry briars in full bloom.

Three of the four specimens of *palaemon* that are contained in the collection of the Boston Society of Natural History are labelled from White Mountain localities (two from Bretton Woods and one from Franconia); the fourth specimen is evidently an old one and bears no locality label.

As compared to *palaemon* from England, my specimen is a little smaller and quite differently marked, the checker-spots of yellow being smaller and covering the wings less. It agrees with White Mountain specimens of *palaemon*.

PAMPHILA METEA Scud. Appeared in 1920 in considerable numbers on May 30 and for a week or so thereafter. I found it only in a certain field covered with old matted bunch-grasses where were some wild strawberries in blossom around which the skippers flew to some extent. They were found almost equally abundant throughout the field, however, and probably laid their eggs on the type of grass present there.

P. LEONARDUS Harris. Taken on roadside flowers on September 3 and thereafter; not particularly common.

P. SASSACUS Harris. A common skipper flying soon after *habomok* in the early summer. My earliest date in Phillipston seems to be June 10, but I believe this species would turn up there at least a week earlier.

POLITES MANATAAQUA Scud. An uncommon species of which I have a record from Phillipston dated July 8.

P. TAUMAS Fabr. (=*cernes* Bd. & Lec.) Very common. My earliest date is June 18, but this species also must occur much earlier.

P. PECKIUS Kirby. Extremely common in early June and practically all summer.

P. MYSTIC Scud. Common; a little later in appearing than the two preceding. My earliest record for Phillipston is June 18, 1918.

CATIA OTHO A. & S., race *egeremet* Scud. Earliest on July 8, 1919.

POANES HOBOMOK Harris. Usually about the first of the common Pamphilids to appear. June 4 is my earliest for Phillipston. The dark female *pocahontas* Scud. occurs at about the same time.

ATRYTONE LOGAN Edw. I have taken one specimen on July 7, 1919.

A. VESTRIS Bdv. Rather common; found by July 13.

ATRYTONOPSIS HIANNA Scud. I found this species on May 29, 1921, in the same field that *metea* occurred in on May 30 of the year before. Not at all common.

AMBLYSCIRTES VIALIS Edw. Flying in mid-June in dry grass fields, usually near woods. My earliest date at this place is June 15, 1920.

*Hesperiidae taken in Amherst, Massachusetts.*

The dates given are the earliest ones recorded. Asterisk (*) indicates date from specimen in collection at Massachusetts Agricultural College.

EPARGYREUS TITYRUS Fabr., May 29, 1923.

THORYBES PYLADES Harris, May 27, 1925.

T. DAUNUS Cramer, July, 1922.

PHOLISORA CATULLUS Fabr., May 18, 1925.

THANAOS ICELUS Scud. & Burg., May 22, 1925.

T. BRIZO Bdv. & Lec., May 3, 1925.

T. PERSIUS Scud., May 8, 1922.

*race LUCILIUS Scud. & Burg., July 18, 1904 (labelled—"det. by Skinner").

*T. MARTIALIS Scud., June 15, 1894.
T. JUVENALIS Fabr., April 27, 1925.
*T. TERENTIUS Scud. & Burg., July 25, 1905.
ANCYLOXYPHA NUMITOR Fabr., May 31, 1921.
*PAMPHILA LEONARDUS Harris, August 11, 1904.
P. SASSACUS Harris, May 28, 1922.
POLITES VERNA Edw., June 30, 1922.
*P. MANATAAQUA Scud., July 12, 1905.
P. TAUMAS Fabr., May 27, 1925.
P. PECKIUS Kirby, May 27, 1925.
P. MYSTIC Scud., June 8, 1922.
CATIO OTHO A. & S., race *egeremet* Scud., June 28, 1922.
*POANES MASSASOIT Scud., August 5, 1905.
P. HOBOMOK Harris (typical form), May 20, 1925.
♀form POCAHONTAS Scud., May 20, 1925.
ATRYTONE VESTRIS Bdv., July 6, 1922.
ATRYTONOPSIS HIANNA Scud., May 28, 1922.
AMBLYSCIRTES VIALIS Edw., May 31, 1925.

To this list of 24 species of Hesperiidae from Amherst may be added three mentioned from there by Scudder in his Butterflies of Eastern United States and Canada:

THANAOS HORATIUS Scud. & Burg.,
ATRYTONE LOGAN Edw.,
AMBLYSCIRTES HEGON Scud. (=*samoset* Scud.).

Four other records by Scudder add to a list of Hesperiidae taken in the Connecticut Valley not more than 20 miles from Amherst:

ACHALARUS LYCIDAS A. & S. at Mt. Holyoke,
POANES VIATOR Edw. from Holyoke,
PAMPHILA METEA Scud. from Springfield,
ATRYTONE BIMACULA G. & R. at Mt. Tom.

*Comparative Notes*

The occurrence of such species as *lycidas, daunus* (= *bathyllus*), and *terentius* at Amherst very well illustrate the advance of southern species along the lowlands of the north. It is in just the same manner that the northern *palaemon* ad-

vanced southward along the highlands south of the White Mountains.*

I am convinced that the reason that *numitor* is not represented in the Phillipston list is that my collecting there has been confined almost entirely to the hills. Scudder says, concerning *numitor*,—"In New England it is abundant south of the northern boundary of Massachusetts, but has been recorded from only two localities north of it . . ." It "frequents low marshy meadows and the borders of runlets passing through them . . ." The late Dr. Russell, a well-known collector in Winchendon, Massachusetts (a town bordering Phillipston on the northeast), records *numitor* from that place in his "List of Lepidoptera No. 1." This region is certainly the border-line for *numitor*. It is a very striking species on the lowlands because it is so numerous, but within a short distance in the hills it is never seen.

The distribution of Hesperiidae in this region is interesting also from the seasonal point of view. In the spring of 1925 careful records were kept of early captures in Amherst and many new records were made. It was an exceptional year for *brizo* which was very common, while *icelus* did not appear until much later than was expected. Further than this it will be sufficient to refer the interested reader to the dates given in each list. Those dates in the Amherst list, however, will give the better picture of seasonal distribution of the various species in Western Massachusetts, as more records were made at Amherst.

## Personal.

Dr. H. H. Knight spent the summer of 1926 at the U. S. National Museum, naming and arranging the collection of Miridae.

## Erebus odora in Massachusetts (Lepid.: Noctuidae).

A fine male specimen of *Erebus odora* was taken here September 27, 1926, and is now in my collection.

E. J. SMITH, Sherborn, Massachusetts.

[* Compare W. F. Fiske's "List of Rhopalocera taken in Webster, New Hampshire," Ent. News, vii, pp. 241-2, Oct., 1896.—EDITOR.]

## Collecting in South America.

By A. F. PORTER.

[From a letter addressed to Dr. Henry Skinner and written from Choramazu, Peru, June 24, 1926.]

I have been in Peru now just three months and have had about two months actual collecting. I spent two weeks in Lima with my wife and after she sailed for home I left by train for Oroya and Cerro de Pasco where the Cerro de Pasco Copper Corporation has its mines. I had letters from President Drew of this Corporation to the officials here and was shown every courtesy during my visit at Oroya and in Cerro de Pasco. I was given a pass over the railway and when I went to the hospital for an examination for dysentery and asked for my bill I was told there was no charge, so you see I was treated royally. The mines, smelters, etc., are all very interesting and it was indeed a pleasure to be in and with Americans once more after six months of Brazil, Uruguay, Argentine and Chile.

The railway trip from Lima up to Oroya is very interesting. The railway reaches the highest altitude of any railway in the world at a station called Ticlio, altitude 16,500 feet above sea level. At such heights many people are stricken with what is known as *sorche* and indeed some are unable to pass over this railway because of the altitude. However, I escaped and suffered no inconvenience at all. The views along the route are grand and to me more so than on the Transandean Railway over which I passed enroute from Argentine to Chile. At Ticlio there were about three inches of snow on the ground and one felt more comfortable in an overcoat.

After four days in Oroya and Cerro de Pasco, I took passage in an auto, (a Dodge) from Oroya to Tarma and on to the village known as La Merced where the real jungle starts. This trip was also very interesting if one can concentrate on the scenery and not think about the rate of speed at which one passes over a very dangerous road. One descends at the rate of 50 to 60 kilometers per hour (about 30 to 35 miles per hour) over a road which twists and turns back and forth and *in places* with only ten to twelve inches to spare

between the wheel tracks and the edge of the cliff, a drop of from 100 feet to 1000 feet should the auto go over (as one did only three weeks ago, killing all passengers). I was delighted with the beauty and ever changing scenery at every turn. First at the highest altitudes only rocks, then a little grass and shrubs and flowers and as one reaches an altitude of 5000 to 3000 feet the forests begin and at 2000 feet tropical jungles abound on every side. In one place we passed under a beautiful waterfall the road being cut into the side of the cliff. Many streams are crossed and some beautiful waterfalls are seen, and all this midst a wonderful flora such as only the tropics can produce.

At La Merced one passes the night at a small hotel and next day I took mules and was on my way to Colonia del Perene one of the five Haciendas of the Peruvian Corporation where I had arranged to stop and make my headquarters with Sr. Valle Riestra, a very superior Peruvian gentleman, who is in charge of all the Haciendas. Here I was met by my kind host, shown to my room and made myself at home. After about two weeks collecting in and about the Colony, I was furnished mules and, with a Chuncha Indian boy, I passed on over a charming but very bad trail to Hacienda No. 3 of the Colony where I spent a month with my Indian boy collecting. Near the "Casa" was a small creek which I named Butterfly creek because of the great quantities of "Mariposas" along this stream, and in one place, some distance up from the house, a beautiful waterfall, some thirty feet or more high, I called Cacia falls because of the number of *Morpho cacia* taken here. My favorite location was on top a great boulder in the center of the stream where I would sit by the hour and watch these gorgeous beauties zigzag up and down along with two other species of *Morpho*. I found that by pinning a battered specimen on the rim of my net these morphos, seeing the flash of blue in the sunlight, were attracted to the net and not a few were captured in this manner. I left after twenty-eight days' actual collecting with 1782 specimens to my credit and my Indian boy brought in 1002 more, so you see we were busy.

Returning to the Colonia del Perene, I secured four mules and a driver, and with my Indian boy as guide we started on a two-day trip to Choramazu with tent, provisions for one month, camera and collecting outfit. I pitched my tent near a beautiful river, water clear as crystal and fine and cold for drinking. The first three days were rainy and not much taken but the fourth day broke bright and clear and I was off at eight o'clock. I found a small creek bed which led away back up a ravine and following this I came, here and there, to swarms of butterflies resting in damp places along the stream. I never saw so many butterflies in all my experience, they would rise in swarms of hundreds at times and in other places not so many. There were many species in these swarms and it was indeed hard for the eye to follow any one individual, zigzagging in and out among so many other common species. As I passed on I came to a great monarch of the forest which at some time had fallen across the stream forming a dam over which the water passed forming a beautiful cascade. Here I took my first *Papilio zagrious* and twenty more in the same place have since fallen into my net. They are not difficult to net if you succeed on the first stroke but once they take alarm they are off and do not return as many other species of butterflies do. I called this "Cascada" Zagrious and here I have spent many hours of watchful waiting for these great orange, yellow and black beauties. Among those taken were two with secondaries almost all black. I think it is called *Baccus* or *Bachus,* but am not sure. Cascada Zagrious is also my favorite bath and I try each day to have a dip in its cool refreshing waters. It beats any shower bath I ever saw to sit under this great log allowing the water to pour over one's shoulders, and is most exhilarating after a long hot day's collecting.

I heard many stories before coming to the Chauchamayo Valley, of the many dreaded insect pests, the terrible fevers, "tigers," (they call all jaguars "tigers" here), venomous snakes, etc., etc., and many of my friends urged me not to go into this dreaded region, but the lure of nature's most wonderful flora and fauna led me on and I have survived two months in the

heart of the jungle and hope to live through three months more. I am told the death rate in the valley is four or five per month out of a population of some 500 people living in the colony and scattered huts here and there, but I think most of these can be laid to improper protection and care, with poor food.

I take six grains of quinine daily as a prophylactic and take a head net to wear in places where mosquitoes are bad; my cot is covered with a mosquito net and my tent door and window also. I use a 2 per cent mercuric iodide soap to wash with and at my bath as well. This soap I find disinfects the hands and body from insect bites, etc., and helps to heal any wound or cut. It is a Parke, Davis and Co. product and I always carry it with me on collecting trips to the tropics or at home. Another essential on tropical jungle trips is good food and plenty of it, for collecting is hard work and the body requires substantial food to keep one going here. Our menu today was "Qutspe," a sort of wild rabbit without the long ears; they are very palatable and my Indian boy knows where to get them. But to go on with the menu: boiled rice, canned peas, crackers, and cheese, cocoa—not so bad for the heart of the jungle. Another thing I consider essential to good health in the jungle is a good canvas folding cot with mosquito net. I also carry two woolen blankets and one comforter or quilt and find an air mattress adds considerably to one's comfort. I always wear light weight all wool underwear which protects one from chills should one get soaked in a sudden tropical downpour and a pair of light gloves with fingers cut out would add protection to the hands and wrists from a tiny gnat found plentifully here while collecting or in camp.

[A later letter from Mr. Porter, at Colonia del Perene, stated that he expected to leave on October 1 for Ecuador, spend three months in that country and then on to Colombia for four months. Mr. Judson Coxey, of the American Entomological Society, plans to join Mr. Porter at Buenaventura, Colombia.]

## Concerning the Insect Collection.

By MELVILLE H. HATCH,* University of Michigan.

While much has been written about the collecting of insects, there is relatively little concerning the organization of the insect collection. The following treats of certain aspects of this matter. The function of the insect collection is dual, and success in its maintenance depends upon the distinctness with which the two are kept separate in the collector's or curator's mind. They are its reference function and its research function.

The collection organized for reference will contain a limited number of specimens (which may range upward from one or two) of each type or form which it is desired to represent. Males and females, wherever distinguishable, should be treated as separate types, as well as color or structural variants, named or unnamed. In this way a single species may come to be represented by anywhere up to several dozen short series of specimens in the case of highly variable species. In case the variants recognized are not distinguished in the literature, they should be numbered, lettered, or named in the collection and notes made as to the distinguishing characters. No attempt should be made to illustrate geographical distribution.

A collection of Coleoptera so organized is useful for the determination of specimens by comparison, for the interpretation of the literature, for morphological purposes where occasional specimens may be selected for dissection, and for the study of fossils.

The scope of the research collection is much more extensive. As a basis for the study of individual variation or geographical distribution and as the depository of material that has served as the basis of ecological, life history, or other studies, there is no limit to the number of specimens of a type it should involve. It recognizes that a species is only an induction based on individual specimens and that the larger the series the more valid the induction becomes.

The difficulties of ever mounting costs and increasing insect

*Contribution from the Zoological Laboratory of the University of Michigan.

boxes, ultimately tending to terminate in chaos, to which the private collection is so frequently subject, are probably due in great measure to a failure to keep these two functions separate in mind and practice. A reference collection of beetles, if rigidly limited in the number of specimens maintained per species or type, can be expanded to contain an appreciable portion even of this order without becoming unmanageable. A thousand Schmidt boxes, containing an average of 25 to 50 species each, provide space for from twenty-five to fifty thousand species.

The value of a reference collection for the individual student of Coleoptera or the museum is of the same general nature as that of the library.

On the other hand, it is easy for the research collection to grow to such an extent as to become unmanageable or very expensive. Only the largest museums can attempt to collect series in all groups and for all regions. Individuals and most museums must confine their attempts to one or a few groups or one or a few regions. Every museum, from largest to smallest, should assemble series from at least its own immediate region (county, state, or country, as circumstances may permit). No investigator should, however, confine himself in monographic work to a single collection, but should borrow material as extensively as possible.

The following points may be noted in the organization of a reference collection. Each determination label should bear in addition to the complete name of the form (genus, subgenus in parentheses, species, variety, and author of the last component of the name) the name of the determiner and year in which the determination was made, since only thus may the accuracy of the determination be estimated. The author finds it impracticable to arrange his collection in one series for the world. Not only is the Junk-Schenkling *Coleopterorum Catalogus* not completed, but its arrangement of species under the genus is alphabetical, a most unsatisfactory arrangement for cabinet purposes. The Coleoptera portion of the *Genera Insectorum*, in which the species are arranged naturally, to say nothing of its great cost, is still more incomplete. Furthermore, for or-

dinary purposes, only the Nearctic series is usually required. Therefore the author arranges his collection in three series. (1) The Nearctic series is arranged according to the Leng catalogue or a subsequent revision, in which each species label is given the Leng catalogue number. (2) The European series is arranged at present according to the Reitter, Heyden, and Weise *Catalogus Coleopterorum Europae* published in 1906. In the future, however, collections from this area should be arranged according to Winkler's *Catalogus coleopterorum regionis palaearcticae,* now in process of publication, which will allow for the inclusion of species from Palaearctic Africa and Palaearctic Asia. The introduction of serial numbers in this excellent work makes it possible to place numbers on the species labels as with the Leng catalogue. (3) An exotic series from the rest of the world arranged according to the *Coleopterorum Catalogus* where available and the best obtainable sources otherwise. The presence of the species in the collection is indicated by placing an "x" before the name of the species in the Nearctic or Palaearctic catalogues. In the *Coleopterorum Catalogus* an "x" indicates the presence of a species in the exotic series, and a "N" or "P" its presence in the Nearctic or Palaearctic series.

But coleopterists are mortal! The great Coleoptera collections in this country have been willed to museums. Lesser ones are willed to museums or broken up and sold. Each generation of coleopterists must start in anew to build up its material equipment. Further, at no museum known to the author in the entire country, except the National Museum, is there any prospect of a succession of coleopterists being maintained. Many do not have a coleopterist at the present time. The author, therefore, is led to enquire whether or not the advancement of coleopterology would be better served by having collectionc passed from individual to individual, so that the pupil might start in as regards material equipment where the master left off.

Several comments may be made on such a proposal.

(1) This plan would be unnecessary if all coleopterists were

assured of positions in or near museums with large collections. The possession of such a collection would not make a man unavailable for a museum position, though it might be necessary to arrange that he should make no additions to his collection while in the services of the museum.

(2) Special provisions might or might not be desirable for the deposition of types.

(3) Provisions would have to be made so that the bequest would not become a burden to the recipient. It might be provided that the recipient should select only the material that would supplement his own reference series. The residue might be deposited in a museum.

(4) A certain standard of ethics would have to be maintained. Material secured in this way should not be subject to sale at all or to disposal except to students who would carry on the original stipulations.

Special collections involving extended series are probably best deposited in museums as at present.

Such a plan would mean that large collections would be not alone in the hands of middle aged men who have spent all their lives in their formation, but in the hands of young men as well, who would be able to make extra progress thereby. At least, let the idea be considered.

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### Additions to the Insects in the United States National Museum.

The U. S. National Museum has recently received as donations two important collections of insects. One of these is from John D. Sherman, Jr., of Mount Vernon, New York, comprising about 20,000 specimens of water beetles of the families Dytiscidae and Haliplidae, and representing about forty years of entomological activity on the part of the donor. This Mr. Sherman gives "in loving appreciation and honor of Dr. E. A. Schwarz." The second donation is from Dr. E. A. Chapin, formerly of the Bureau of Animal Industry, but recently appointed to the staff of the Bureau of Entomology as a specialist in beetles. This collection comprises fleas, lice and other ectoparasites, and is the largest addition in this group ever received by the museum. (*Science*, Oct. 29, 1926, pp. 424-5.)

# ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., DECEMBER, 1926.

## Welcome to Philadelphia.

The American Association for the Advancement of Science and its affiliated and associated societies, will meet at Philadelphia, December 27, 1926, to January 1, 1927. The University of Pennsylvania and the Academy of Natural Sciences of Philadelphia offer meeting places to the visitors and extend to them a cordial welcome. Among those coming to this city the NEWS looks for many entomologists, who will find a hearty greeting awaiting them in the Department of Insects of The Academy, and on the part of The American Entomological Society.

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## Tenth International Congress of Zoology in Budapest, 1927. Preliminary Announcement.

The Ninth International Congress of Zoology in session at Monaco in March, 1913, decided to hold the tenth meeting in 1916 at Budapest, Hungary, under the presidency of the undersigned. Unfortunately the events of the war made it impossible to adhere to this decision, and the meeting of the Tenth Congress had to be postponed. The present international situation is now such, however, that this congress can be held during the coming year.

In accord with the Permanent Committee of the International Congress of Zoology I have the honor, therefore, to announce that the Tenth International Congress of Zoology will meet in Budapest, Hungary, on September 4 to 9, 1927, and that all zoologists and friends of zoology are hereby cordially invited to attend.

The detailed program of the Congress will be issued before the end of the present year and sent to those interested.

Budapest, Hungarian National Museum, September 4, 1926.

DR. G. HORVATH,

President, Tenth International Congress of Zoology, Director, Department of Zoology, Hungarian National Museum.

# Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

**Papers published in the Entomological News are not listed.**

**1**—Trans., American Ent. Soc., Philadelphia. **4**—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **10**—Proc., Ent. Soc. Washington. **12**—Jour. of Economic Ent. **14**—Ent. Zeitschrift, Frankfurt a. M. **18**—Intern. Ent. Zeitschrift, Guben. **19**—Bull., Brooklyn Ent. Soc. **20**—Societas Entomologica, Stuttgart. **21**—The Entomologist's Record. **22**—Bull. of Ent. Research, London. **25**—Bull. Soc. Ent. France. **29**—An. Rept., Ent. Soc., Ontario. **36**—Trans., Ent. Soc. London. **39**—The Florida Entomologist. **48**—Wiener Ent. Zeitung. **50**—Proc., U. S. National Museum. **55**—Pan-American Ent., San Francisco. **57**—Revue Men., Soc. Ent. Namuroise. **72**—Revue Russe d'Entomologie. **75**—Ann. & Mag. of Nat. Hist., London. **77**—Comptes R., Soc. Biologie, Paris. **89**—Zool. Jahrbucher, Jena. **101**—Biological Bul., Woods Hole, Mass. **104**—Zeit. f. Wissens. Zool., Leipzig. **107**—Biologisches Zentralblatt. **133**—Jour. Experimental Zool. **135**—Quarterly Jour. Microscopic. Sci. **154**—Zool. Anzeiger, Leipzig.

**GENERAL.—Boycott, A. E.**—The reaction to flea bites.—Nature, London, cxviii, p. 591. **Britton, W. E.**—Some insects and entomologists.—**29,** lvi, p. 55-63. **Chapman, R. N. et al.**—Studies in the ecology of sand dune insects.—Ecology, vii, p. 416-26. **Criddle, N.**—The entomological record [for Canada].—**29,** lvi, p. 104-107. **Davis, J. J.**—Opportunities in entomology.—Proc. Indiana Acad. Sci., xxxv, p. 299-302. **Essig, E. O.**—Insects in the Yosemite museum.—**55,** iii, p. 43. **Felt, E. P.**—The distribution of insects and the significance of extralimital data.—**29,** lvi, p. 44-50. **Fisher & Ford.**—Variability of species.—Nature,

London, cxviii, p. 515-6. **Flanders, S.**—Insect enemies of the codling moth in the vicinity of Ventura, California.—**55,** iii, p. 44-45. **Heikertinger, F.**—Wie wird man spezialist? Erstes stuck der artikelreihe: "Die schule des spezialisten."—**48,** xliii, p. 49-68. **Hering, M.**—Die ökologie der blattminierenden insektenlarven.—Zool. Bausteine, Berlin, i, 253 pp., ill. **Huxley, J. S.**—The outlook in biology.—Rice Inst. Pamphlet, xi, p. 241-338. **Leng, C. W.**—The resting place of some collections.—**6,** xxxiv, p. 286-287. **McGregor, E. A.**—A device for determining the relative degree of insect occurrence.—**55,** iii, p. 29--33. **Meissner, O.**—Kurze bemerkungen über einige neuere naturwissenschaftliche theorien.—**20,** xli, p. 37-38. **Mote, Wilcox, Davis.**—The natural "cleaning up" habit of insects.—**12,** xix, p. 745-748. **Osborn, H. F.**—The problem of the origin of species as it appeared to Darwin in 1859 and as it appears to us to-day.—Science, lxiv, p. 337-41. **Poulton, E. B.**—The evolution of the colours and patterns of cuckoo's eggs and its relation to that of insect resemblances, such as mimicry.—**36,** 1925, p. xcvi-civ. **Rau, P.**—The ecology of a sheltered clay bank; a study in insect ecology.—Trans. Acad. Sci. St. Louis, xxv, p. 158-276, ill. **Smith, H. S.**—The fundamental importance of life-history data in biological control work.—**12,** xix, p. 708-714. **Stiles, C. W.**—Notice of request to admit Hübner's (1806) "Tentamen" to nomenclatorial status under suspension of international rules.—**4,** lviii, p. 234. **Swezey, O. H.**—Recent introductions of beneficial insects in Hawaii.—**12,** xix, p. 714-720. **Van Dyke, E. C.**—The value of life history studies from the viewpoint of systematic entomology.—**12,** xix, p. 703-707. **Weiss, H. B.**—Two quasi entomological essays of the eighteenth century.—**4,** lviii, p. 209-211. **Weiss, H. B.**—Peter Pindar and the entomology of his poems.—**6,** xxxiv, p. 231-24 p. **Wheeler, W. M.**—Emergent evolution and the social.—Science, lxiv, p. 433-440.

**ANATOMY, PHYSIOLOGY, ETC.—Abney, L.**—The occipital suture and its relation to a protocular sclerite.—**7,** xix, p. 286-289. **Altenburg, E.**—A working model for demonstrating the mosaic theory of the compound eye.—Brit. Jour. Exp. Biol., iv, p. 38-45. **Bodines, J. H.**—Hydrogen ion concentration in the blood of certain insects (Orthoptera).—**101,** li, p. 363-69. **Cameron, J. A.**—Regeneration in Scutigera forceps.—**133,** xlvi, p. 169-79. **Crampton, G. C.**—A comparison of the neck and prothoracic sclerites throughout the orders of insects from the standpoint of

phylogeny.—**1,** lii, p. 199-248. **Eisentraut, M.**—Ueber das auftreten von chromosomenbläschen in den reifeteilungen einiger acridier.—**104,** cxxviii, p. 253-66, ill. **Hargitt, C. W.**—Studies in behaviorism.—Proc. Indiana Ac. Sci., xxxv, p. 269-73. **Hein, H.**—Das punktauge.—Kosmos, Stuttg., x, p. 356-9, ill. **King, S. D.**—Note on the oogenesis of Peripatopsis capensis.—**135,** lxx, p. 553-8. **Oka, H.**—Ein interessanter fall von körpertorsion bei insekten.—**154,** lxviii, p. 205-8, ill. **Plunkett, C. R.**—Interaction of genetic and environmental factors in development.—**133,** xlvi, p. 181-244. **Rudolfs, W.**—Studies on chemical changes during the life cycle of the tent caterpillar (Malacosoma americana).—**6,** xxxiv, p. 249-256. **Stern, C.**—Eine neue chromosomenaberration von D. melanogaster und ihre bedeutung für die theorie der linearen anordnung der gene.—**107,** xlvi, p. 505-8. 8.

**ARACHNIDA AND MYRIOPODA.—Bradbury, O. C.**—Some phases of the embryology of the carnation mite.—Jour. E. Mitchell Sci. Soc., xlii, p. 94-98. **Ewing, H. E.**—The life history and biology of the tree-toad chigger, Trombicula hylae.—**7,** xix, p. 261-267. **Flaig, W.**—Spinnen auf der fischjagd.—Kosmos, Stuttg., x, p. 339-42, ill.

(N) **Savory, T. H.**—The classification of spiders: some comments and a suggestion.—**75,** xviii, p. 377-381. ***Vitzthum, H.** —Acari als commensalen von Ipiden.—**89,** Syst., lii, p. 406-503.

**THE SMALLER ORDERS OF INSECTA.—Fedorow, B.**—Zur anatomie des nervensystems von Peripatus.—**89,** Anat., xlviii, p. 273-310. **Krafka, J.**—The so-called occipital suture in the trichopterous larvae and in other orders.—**7,** xix, p. 281-285. **Wiebe, A. H.**—The first three larval stages of Hexagenia bilineata.—Ohio Jour. Sci., xxxvi, p. 267-75, ill.

(N) ***Moulton, D.**—New American Thysanoptera.—**1,** lii, p. 119-28, ill. ***Moulton, D.**—New California Thysanoptera with notes on other species.—**55,** iii, p. 19-28.

(S) ***Navas, L.**—Insectos exoticos neuropteros y afines.—Brotéria, Zool., xxiii, p. 79-93, ill.

**ORTHOPTERA.—Rummel, C.**—Observations on polygamous and supposedly cannibalistic insects of the order Orthoptera.—**19,** xxi, p. 144.

(N) ***Hebard, M.**—A revision of the N. Amer. genus Belocephalus (Tettigoniidae).—**1,** lii, p. 147-86, ill.

**HEMIPTERA.—Olsen, C. E.**—A review of DeLong's monograph of the genus Deltocephalus.—**6,** xxxiv., p. 265-268. **Palmer, M. A.**—Life history studies of seven described species of the genus Lachnus.—**7,** xix, p. 300-330. **Readio, P. A.**—Studies on the eggs of some Reduviidae.—Univ. Kans. Sci. Bull., xvi, p. 157-80, ill.

(N) ***Ball and DeLong.**—Three new species of Deltocephalus.—**6,** xxxiv, p. 241-242. **Blatchley, W. S.**—Heteroptera or true bugs of eastern No. America.—Nature Pub. Co., Indianapolis, 1116 pp. ill. ***Dozier, H. L.**—Notes on new and interesting delphacids.—**6,** xxxiv, p. 257-263. ***Essig, E. O.**—The madroma aphis.—**55,** iii, p. 42-43. ***Knight, H. H.**—Descriptions of eleven new species of Phytocoris from eastern North America (Miridae).—**19,** xxi, p. 158-168. **Robinson, W.**—The genus Erythroneura north of Mexico.—Univ. Kans. Sci. Bull., xvi, p. 101-156, ill.

(S) ***Drake, C. J.**—South Am. species of the genus Tingis.—Ann. Carnegie Mus., xvii, p. 83-5. ***Goding, F. W.**—New Membracidae.—**6,** xxxiv, p. 243-46; 279-281. ***Osborn, H.**—Faunistic and ecologic notes on Cuban homoptera.—**7,** xix, p. 335-366.

**LEPIDOPTERA.—Anon.**—Chez les papillons.—Nat. Can., liii, p. 49-50. **Beuret, H.**—Remarques sur la variation des ocelles de revers chez les Lycenes.—**57,** 1926, p. 70-72. **Clark, A. H.**—Our giant moths.—Sci. Monthly, 1926, p. 385-97, ill. **Dow, R. P.**—Migration of Pyrameis cardui.—**6,** xxxiv, p. 287-288. **Englehardt, G. P.**—Melitaea harrisi from Long Island, N. Y.—**19,** xxi, p. 157. [**Fladung, E. B.**]—Common butterflies of Maryland.—Bul. Mary Acad. Sci., v, p. 58-64. **Hayward, J. K.**—Miscellaneous notes from Argentina. VI.—The earlier stages of Papilio thoas race brasilensis.—**21,** xxxviii, p. 130-133. **Kusnezov, N. J.**—Morphology of the copulatory structures in some cases of gynandromorphism in lepidoptera.—**101,** li, p. 245-56. **Mace, H.**—Pieris brassicae and its parasite, Apanteles glomeratus.—**9,** lxix, p. 278-79. **Przegendza.**—Ueber Zygaenenbastardierung.—**14,** xxxx, p. 317-319. **Rostand, J.**—Influence de diverses conditions exterieures sur le Bombyx disparate.—**25,** 1926, p. 151-152. **Rummel, C.**—Observations on the propagation and behavior of Telea polyphemus.—**19,** xxi, p. 156-57. **Smith, T.**—The breeding of lepidoptera.—Trans. N. Strafford Field Club, lx, p. 96-102. **Stiles, C. W.**—Zoological nomenclature. [In re. the "Tentamen"].—Science, lxiv, p. 381. **Van Duzee, E. P.**—Interesting moths

from Mill Valley, California.—**55,** iii, p. 33. **Yagi, N.**—Cocooning behavior of a saturnian caterpillar (Dictyoploca japonica); a problem in analysis of insect conduct.—**133,** xlvi, p. 245-62.

(N) ***Barnes, W. & Benjamin.**—A new Xylomyges from California (Phalaenidae).—**55,** iii, p. 12. ***Barnes & Benjamin.**—New species of Coloradja (Saturniidae).—**55,** iii, p. 13-15. **Barnes and Benjamin.**—Synonymic notes on Arctiidae.—**55,** iii, p. 16-18. ***Barnes and Benjamin.**—A new form of Sabulodes caberata (Geom).—**55,** iii, p. 41. **Bell, E. L.**—Notes on some Hesperiidae from Alabama (Rhopalocera).—**6,** xxxiv, p. 269-271. ***Draudt, A.**—Seitz's Die Gross-schmetterlinge der erde, Fauna Amer., Lief. 188, 189, Vol. 7, p. 293-308, ill. [n. sp. from Mexico]. ***Gehlen, B.**—Neue Sphingiden.—**18,** xx, p. 248-252. ***McDunnough, J.**—A new Haploptilia from sweet fern.—**4,** lviii, p. 218.

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**SPECIAL NOTICES.—Correction.**—Under General in the July number of this journal p. 217, we credited a title to W. Bateson in error. This should have been E. B. Poulton.

**Opinions** rendered by the international commission of zoological nomenclature No. 97. Did Hübner's tentamen, 1806, create monotypic genera? (Smith's Misc. Coll. Vol. 71, No. 4, p. 19-30.

DIE ÖKOLOGIE DER BLATTMINIERENDEN INSEKTENLARVEN von DR. MARTIN HERING. Zoologische Bausteine, Ausschnitte aus dem Gesamtgebiet der Zoologie. Band I Heft 2:1-253, 1926.—Dr. Martin Hering is well known as an authority on leaf-mining insects and has described more than a score of new species especially in the genus Phytomyza (Diptera). His papers have been published in numerous German periodicals from 1920 to 1926.

The present paper "The Ecology of Leaf-Mining Insect Larvae" summarizes, in a large measure, his previous work and adds many original observations, covering the field in an admirable manner. He has drawn freely from the investigations of other workers which greatly enhances the value of the study and he has selected representative species from the whole world to illustrate his ideas and theories regarding the leaf-mining habit. The task of summarizing the habits of species so scattered in four orders of insects is not an easy one and the author has accomplished it remarkably well. The paper shows careful, painstaking work and keen observation. It contains two hundred and fifty three pages, is well written and amply illustrated with text figures and includes two plates, one a polychrome showing color changes in certain mines. There is in addition an excellent bibliography of more than four hundred entries arranged alphabetically according to authors.

The study is introduced by a definition of a mine and a description of the tissues of a leaf eaten by leaf-miners. A nomenclature of leaf-mines, previously published by the author, is summarized. Names are also given for each type of leaf-mine. While this terminology may have its value especially to designate certain types of mines hitherto unnamed, it is doubtful whether the old mine names, in use since the time of Réaumur, Swammerdam and DeGeer will ever be abandoned. In considering the various types of mines, the author apparently

does not distinguish between the bast-miners (Marmara and other genera) and the cambium-miners (certain species of Agromyza). The former feed on dead plant cells while the latter feed on living plant cells.

A series of chapters follow dealing with the various habits and problems of the miners in their peculiar abode, the leaf. They are first reviewed in relation to miners of other plant tissues. All are alike in that they have a similar protective covering and take similar food. The temporary leaf-miners form a connecting link between the true leaf-miners (stationary leaf-miners) and the miners of other tissues.

In concluding the general discussion on miners, the author gives a systematic arrangement of the mining genera with criteria for determining to what order of insects the mines belong.

The author then proceeds to a discussion of the leaf-mining species, taking up at first the eggs. The subsequent chapter deals with the course and distribution of the mine on the leaf. Considerable space is devoted to a discussion of the larva in relation to its mining habit, showing modifications and adaptations of the larvae to the mining habit. Trägårdh has been followed closely especially in the discussion of the Lepidoptera. The food habits are discussed in comparison with the food habits of the free-feeding larvae, the principal difference being that the mining larvae feed on parenchyma and the sap of epidermal cells while the free-feeding larvae eat a wider range of plant cells. The chapter closes with a discussion of the Coleophora and a key to the types of cases they construct.

In discussing the nourishment of the larvae, the author points out conditions peculiar to leaf-mining larvae such as, the added protection from the coverings of the mine, the higher temperature and the greater moisture conservation in the mine. In logical sequence a description of Monophagous, Polyphagous and Oligophagous miners follows, with a list of the plant families and the insects mining upon them.

The discussion of the disposal of the excrement brings up new ecological problems which have been discussed but little in literature. The larvae show ingenious ways of avoiding their waste material.

The chapter on the change of color in the mine involves considerable chemistry and botany. Certain conditions within the mine as the presence of frass and the interference with the fibrovascular bundles introduce new factors in connection with the leaf-mining larvae. Reference is also made to the change in color of certain larvae.

A chapter is devoted to the miners of aquatic plants. Some excellent, original observations are added, especially concerning certain females that descend into the water to lay their eggs and certain larvae that fall into the water and seek new leaves in which to mine.

The part dealing with the enemies of leaf-miners is largely new, especially the inquilines of miners and the symbiotic organisms as the yeasts, bacteria and molds that live in the mine.

The author goes into considerable detail concerning the nature of the injury to the plant, discussing the proliferation of the parenchyma calls in the mine chamber in an attempt of the plant to overcome the injury. This response of the plant eventually leads, in some species, to the production of galls.

The concluding chapter deals with the geographical distribution of leaf-miners and a word about specialists who are studying leaf-miners.

We believe that this paper is a valuable contribution to entomology and especially to our knowledge of the leaf-mining insects, and should be highly valuable not only to the student of leaf-mining insects but to the ecologist, the plant physiologist, the morphologist and to those who desire to become better acquainted with some of the most interesting and highly specialized of insect life-histories.

S. W. Frost.

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### Two Recent Text-books on Ecology

Animal Ecology. By A. S. Pearse, Professor of Zoology, University of Wisconsin. McGraw-Hill Book Co., Inc., New York, 1926. Pp. ix, 417. $4.00—Animal Ecology with especial reference to Insects. By Royal N. Chapman, The University of Minnesota. Burgess-Brooke, Inc., Minneapolis, 1925. [The Preface, however, is dated June, 1926.] Pp. ix, 187, 183. $4.85.—The former is a volume printed as usual on both sides of each leaf, measuring 9¼x6x1¼ inches; the latter is mimeographed on one side only of each leaf resulting in a tome 10⅞x8½x1¾ inches, weighing 3 pounds, 15 ounces, and so bound as to require considerable muscular effort to keep it open at a desired place. Prof. Pearse tells us that "Animal ecology may be said to have three chief aspects: (1) descriptive, (2) quantitative, (3) analytic and synthetic"; his own book is a descriptive ecology and catalogues a large number of ecological facts. Prof. Chapman's work belong in the second division: "Quantitative data have been presented as far as possible" (p. ii). In the first book the subject matter

is grouped under Physical, Chemical, (Chap. II) and Biological (III) Factors, Succession (IV), Marine (V), Freshwater (VI) and Terrestrial (VII) Animals, Relations of Animals to Plants (VIII) and to Color (IX), Intra- (X) and Inter- (XI) Specific Relations and the Economic Relations of Ecology (XII). The subject matter of the second volume is treated as A. Autecology and B. Synecology. These terms, proposed by Schröter in 1910, are equivalent respectively to the "individual ecology" and "associational ecology" of C. C. Adams of 1913. Autecology of Chapman thus considers the topics dealt with in Pearse's chapters II-IV and parts of IX-XI, while Synecology embraces much of Pearse's chapters IV-VII and XII. As an illustration of Prof. Chapman's viewpoint, the following paragraph from the discussion of biotic potential may be quoted (pt. I, pp. 145-6); "In the consideration of the effects of the various physical factors of the environment, some indication was given of the amount of information which has accumulated with regard to the action of these factors. In general, this information is all measured in terms of physical processes and in addition to this there is no standard method of tabulating it. It is possible that when we have terse methods of expressing these effects in terms of their action on organisms, the day may come when tables will be prepared of the various physical coefficients and constants of species in much the same way that we now have them for the various elements and their compounds in the physical and chemical tables. This would be a striking contrast to our present method of burying quantitative data in long descriptive papers. It would make it possible for future generations to obtain a brief summary of the knowledge of the past without going thru untold numbers of volumes." In Prof. Pearse's ninth chapter insects naturally receive much attention and he is more sympathetic with theories of warning coloration and of mimicry than most American writers have been in spite of his slap at "the enthusiasm that is so characteristic of the Poultonean School." Heterodox is the statement that "the insect pupa that is formed as an outgrowth from the larva is to be interpreted as a separate generation from the larva" (p. 341). Both works contain extensive bibliographies; Prof. Pearse's unfortunate practice of quoting frequently from late editions of his authors (*e.g.* Bates 1892, Wallace 1905—p. 311) can not fail to give a distorted historical perspective to unsophisticated readers, but his book is provided with an index, which Prof. Chapman's lacks.

P. P. CALVERT.

# ENTOMOLOGICAL NEWS

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# EXCHANGES

**This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.**

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**These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.**

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**Buprestidae**—I am making a revisional study of the North American Agrilus, and will be glad to examine any material in this genus collected north of Mexico. W. S. Fisher, U. S. National Museum, Washington, D. C.

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